THE ABORTIVE PLAN FOR NORTHFLEET NAVAL DOCKYARD DURING THE NAPOLEONIC WARS

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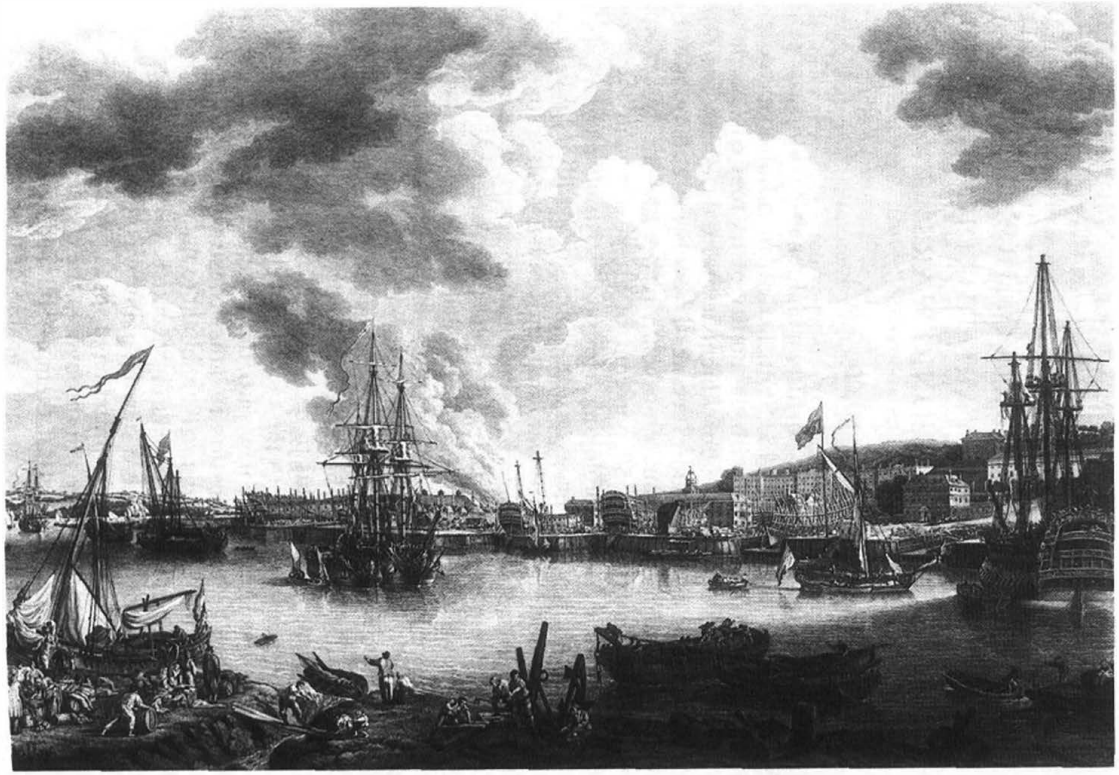
During the period of wartime hostility with French Revolutionary and Napoleonic France (1793-1815), the British Admiralty became increasingly disillusioned with the ability of its four eastern dockyards to undertake the roles for which they were designed. The four yards concerned - Chatham, Sheerness, Woolwich and Deptford - were all located in the county of Kent. Between them, these yards possessed approximately 50 per cent of all government facilities available to the navy. Employing over 6,000 artisans and labourers and housing all of the necessary facilities for building, repairing, fitting and refitting ships of war, the four Kentish yards were a massive and integral part of the nation's rapidly expanding military-industrial complex (**Plate I**). Yet, despite their national importance, these yards were seriously disadvantaged. This was primarily a result of their geographical location, none of them particularly well positioned for the reception and repairing of large warships. For this reason, the Admiralty began to give thought to the very real possibility that all four should be closed. In doing so, an entire new dockyard was contemplated, this to be located at Northfleet.

In giving consideration to the factors that led to Northfleet being the chosen location for the new yard, this paper will also examine the reasons that worked against its eventual construction. Before doing so, however, it is necessary to give thought to the various factors that so disadvantaged the four existing Kentish yards. Of particular significance, and serving as a starting point, was that the majority of these yards suffered a severe limitation of space. With the Navy having witnessed considerable growth throughout the eighteenth century, it was clear that the yards, all of them established in the seventeenth century or earlier, were no longer capable of undertaking the huge work load that was expected of them. Instead, increased amounts of shipbuilding and repair work were having to be contracted elsewhere



Engraving, drawn by Paton *c.* 1790, of the hectic scene at Chatham dockyard

and undertaken in privately owned shipyards. This was not something the Admiralty favoured, preferring to see both new construction work and the repair of older vessels carried out in dockyards over which it had direct control. For this to occur however, all of the eastern yards were in need of both significant enlargement and a modernization programme that could only be undertaken if more land was absorbed into these yards. Yet, neither Woolwich, Deptford nor Sheerness appeared to offer, as an economic proposition, the necessary space for such a programme. At the first two, this primarily resulted from the establishment of townships within the very shadow of the walls that surrounded these yards.[1] Similarly, at Sheerness, which was positioned on a narrow spit of land, the potential for growth was primarily negated by the existence of a large fort, a military barracks and an ordnance wharf. Although here, so it should be noted, a second dry dock and a building slip had been added during the late eighteenth century, but this had only been possible through the expensive and time consuming procedure of claiming land from the sea.[2] Only Chatham appeared to possess adequate vacant land for any sizeable expansion. To the north of the yard, and well away from the central township, were vast tracts of undeveloped marshland, undeveloped apart from a new mast pond built during the mid eighteenth century. However, further use of this land had to be disregarded because of the existence of a second problem and one that seriously jeopardized the long term future of Chatham dockyard.

If Chatham yard was to be expanded, then an easing of the difficulties of navigating the Medway had to be found. As a river, it was so seriously subject to silting that the channels were frequently too shallow for larger vessels bound for the yard. It was a concern first raised in 1611 when it was felt that the Medway might be subject to silting in future years. At that time, attention was being given to the construction of a new dry dock that would lead to naval vessels making greater use of the river. Among reasons given for the Medway's likely silting was that of 'the wearing of the marshes upon Frindsbury [which] may in time choke up the river'.[3] However, the notion was ultimately rejected, the Medway, at this time, appearing to be gaining in depth rather than shallowing. This was deduced from the following observation:

> The navy Royal which before the Queen's time consisted only of small ships could not in former times come up above Gillingham, three pulls below Chatham. But being in her reign doubled in number and greater ships they ride now between Upnor and Rochester Bridge.[4]

Two possible reasons were put forward to explain this latter occur-

rence. The first was that the marshlands, while at one time 'wearing away', were now enclosed by sea walls, a process that also allowed the river to flow faster and more effectively scour the bottom. The second was that the Medway was now used for the moorings of ships and these vessels, as they swung on their cables, were thought to be hitting the ground and 'wearing the channel deeper'.[5]

The outcome of this early debate was much influenced by acceptance of the belief that the river was gaining rather than losing in depth. As a result, it was decided that the new dry dock should be built. This, in turn, paved the way for a massive enlargement programme of the existing yard at Chatham, with the Medway becoming indispensable for the future needs of the Navy. In having made such a decision the Admiralty, in future years, had to face up to the consequences of its earlier mis-judgment. The Medway, despite cited evidence to the contrary, was to become subject to increased silting, with its main navigational channels eventually threatening to become so shallow as to prevent the regular movement of large warships.

One of the first to record evidence of an increasing problem was Thomas Kempthorne in 1724. Resident-commissioner of the dockyard, he complained that larger ships were unable to move up river other than on a tide that was between half flood and half ebb. As a result of Kempthorne's concern, a careful survey was undertaken, with numerous soundings taken at various points of the river. In West Gillingham Reach, where a number of the larger warships were moored, it was discovered that on a spring tide, the greatest depth of water was 27ft but this fell to 17ft during a neap tide. Even less favourable however, was the deepest point of East Gillingham Reach where there was only 19ft on a spring tide, this falling to 16ft. In Cockham Wood Reach the soundings were taken as 17ft, falling to 12ft and from Chatham Quay to Upnor Castle it was 23ft and 11ft. Given that the depth required by a fully-laden first rate warship of 100-guns was in excess of 20ft, and that there was a general demand for even larger ships, then the problem of the River Medway can be more readily appreciated.[6]

By the 1770s the situation had become even more serious. Instead of ships being able to move up-river when the river was between half flood and half ebb, such was now only possible on a spring tide. In other words, ships that were once able to navigate the Medway on tidal conditions occurring twice in every twenty-four hours, were now restricted to a particular tide that only took place once every month. Furthermore, mobility of shipping on the Medway continued to decline, a survey of 1763 showing that since 1724 the depth of water on a spring tide in Cockham Wood Reach had been reduced by

2ft while the area between Chatham quay and Upnor Castle had seen a reduction in depth of some 4ft.[7]

The inadequacy of depth associated with the Medway was also duplicated in the Thames, with the loss of depth here much more serious. Ships attempting to reach Deptford and Woolwich were much more restricted as the navigable channels had, in part, been reduced to a depth of only 19ft on a spring tide. As a result, it was no longer possible for larger warships to be sent to Deptford, while such vessels could only be sent to Woolwich if they first had their guns removed at Gravesend. As for Deptford, this yard, because of the state of the river, was forced to concentrate on smaller vessels, with nothing more than a 38-gun frigate able to pass this far up river. A further aspect of the problem was that larger ships built at Woolwich and Deptford could not be completed at these yards. The addition of such essential items as masts, anchors and ordnance would so increase their draught that they would then be unable to leave the river. Instead, a newly built ship, once launched, had to be sent elsewhere for completion.

As well as presenting a problem for navigational purposes, the shallowing of the Thames and Medway also undermined the value of these two rivers as naval harbours. This facility was an essential addition for the efficient working of any dockyard. Within this harbour, ships out of commission, were held at permanent moorings, with members of the dockyard workforce ensuring that vessels were maintained and ready for any future conflict. In addition, vessels requiring to be fitted or refitted had this work undertaken while afloat in the harbour. Such essential work as furnishing a ship with her masts, rigging and sails together with the bringing on board of provisions, ammunition and artillery were all undertaken in this stretch of water and as close to the dockyard as possible. A suitable harbour therefore, not only had to have a vast amount of room but it also needed the depth suited for both larger and smaller warships. The inability of the Thames and Medway harbours to provide the necessary depth of water resulted in larger ships moored there having either to be deliberately lightened or running the risk of damaging the keel or lower hull. Neither alternative was acceptable, as a deliberately lightened ship would have timbers normally submerged in sea water exposed to the sun. As a result, the drying process would lead to this part of the ship becoming subject to dry rot.

The problem of mooring ships in the Medway was highlighted in 1771 following an Admiralty inspection of the dockyard and harbour which found:

> on enquiry that the depth of water in this port is scarcely adequate for the draughts of the capital ships built according to the present estimates, as few of them can have the proper quantity of ballast on board, and remain constantly on float. The consequence of which is very apparent . . . [and] which weakens them greatly and makes them sooner unfit for service.[8]

Two years later, during an official inspection of the dockyard at Chatham, members of the Board of Admiralty added the further comment that:

> it must be allowed that this port is not so useful as formerly from the increased size of our ships, so that there are few above five places where a ship-of-the-line can lay afloat properly ballasted.[9]

The more complete survey of 1774 added a few additional points:

> The moorings for ships laid up here extend from a little below Rochester Bridge to the lower part of Gillingham Reach, and extend of about 4 miles, within that space there is only five moorings for ships of 74 guns and upwards where there is water sufficient for them to lay up at and swing or float at low water in Spring Tides if they are properly ballasted, but there is for 20 such ships if they are kept at a light draught of water but this is very prejudiced to them.[10]

The situation of the moorings at Woolwich and Deptford were no better. The survey of 1774, which looked at all of the dockyards in turn, while accepting that these yards were of value for shipbuilding, noted that a problem still existed with the subsequent mooring of these same vessels. According to this survey, the yards at Woolwich and Deptford were:

> useful for building both large and small ships there being a sufficient flow of water for launching them although not a sufficient depth at low water to lay the large ships on float, therefore after such are launched they are moved the first opportunity that offers for sailing them down the River to be laid up at other Ports.[11]

A further deficiency concerned the precise composition of the water at this point of the river, it being fresh rather than seawater:

> It is not adviseable to keep many Ships here that are in good condition any length of Time, because of it being fresh water, in which their bottoms decay much sooner than in Salt, therefore they are usually sent to Chatham where they may on such occasions as aforementioned be Rigged and equipt in like manner.[12]

From this brief survey of the four Kentish yards, it might appear that Sheerness was the least disadvantaged. After all, it had no problems of access, vessels bound for the other Kentish yards only encount-

ering difficulties once they had passed Sheerness. Furthermore, the Medway, being generally deeper at this point, Sheerness had a number of mooring areas that were suitable for large ships to lay afloat while fully laden. Indeed, during the 1760s, with these assets recognised, a plan was put forward by Thomas Slade, Master Shipwright at Chatham, to enlarge Sheerness yard by the taking over of facilities owned by the Ordnance Board. At the same time, greater use could be made of the adjoining harbour:

> The experienced advantage of this Yard, as also the very great Delay attending the getting large ships up and down the Medway (more especially since the increased size of our ships) gave rise to a design of laying up a Number of the great ships at Sheerness, where there is sufficient depth of water for them, and to make Sheerness a fitting Port for large as well as small Ships. With this view a Number of Chain Moorings were made and actually laid down, and twelve ships laid up there since the last Peace [this was the Seven Years War which ended in 1763], which could not be laid up afloat at Chatham.[13]

Unfortunately, these moorings had to be abandoned when it was discovered that the Sheerness harbour area was infested with *Teredo navalis*. A slender boring mollusc, known as ship worm, this was a much feared enemy, for they had the ability of eating their way into a timber hulled warship and destroying the vessel's ability to remain afloat. Most commonly associated with tropical waters, and in particular the Caribbean, they appear to have found some sort of haven in this part of the Medway. According to one Navy Board report on the matter, they were brought here by the old rotting hulks that were used as breakwaters.[14]

However, the existence of 'ship worm' was only one of many problems that confronted the yard at Sheerness. Among others was its exposure to the prevailing westerly winds. Blowing straight across the harbour, ships moored close to the dockyard were given no protection.[15] Further, the yard at Sheerness had no natural supply of fresh water. Instead, both for the needs of the dockyard and that of replenishing warships, it was necessary for a supply of casks to be sent from Chatham. In 1793, for instance, a total of 405 puncheons (or large casks), amounting to well over 25,000 gallons, had to be shipped to the dockyard every week.

A further problem for Sheerness was that of obtaining a permanent workforce. Whereas other royal dockyards were frequently overwhelmed by those who sought employment, matters were very different at Sheerness. Instead, many preferred to avoid it. The reason for this was given by the Sheerness dockyard officers in a letter to the Navy Board written in December 1743. 'We beg leave to observe that

Sheerness has not the best of characters for health, the People around the Country do not care to send their sons here, so readily as they do other yards'.[16] As further evidence of this unhealthiness, these same yard officers informed the Board in May of the following year that 'the labourers are very much reduced by sickness, death etc'.[17] The cause of this unhealthiness was correctly blamed upon the surrounding marshland, with the already much cited report of 1774 indicating that 'the country adjacent to this place is all marshy and has always been reputed Unhealthy'.[18] The Navy Board, in preparing this document, could go no further and were unable to pinpoint a more precise cause. In fact, dockyard workers were subject to malaria, albeit in its milder English form, and which was spread by the existence of large numbers of anopheline mosquitoes that bred in the stagnant marshland waters.[19]

It was the existence of such a wide range of problems at Sheerness that led to an early suggestion that this yard should be entirely replaced by a new facility to be established on the Isle of Grain. Standing on the opposite bank of the Medway, and only a mile from Sheerness, it would have all the advantages accorded to Sheerness while providing shelter to ships moored in the adjacent harbour.[20] The scheme was certainly under consideration during the Summer of 1802 when members of the Board of Admiralty carried out an inspection. Among other things, they examined the proposed ground for the new dockyard, located in the vicinity of Black Stakes Reach, and 'discoursed with several persons'.[21] In a later summary of the visit, it was concluded that their lordships were persuaded that the proposed dockyard would provide a 'secure and capacious anchorage for ships of any draught of water' and that it would possess numerous advantages over Sheerness.[22] That the scheme was never pursued resulted from a serious of later test borings. These proved unfavourable, showing it to be impossible to procure proper foundations for the building of a dry dock and accompanying work sheds.

With failure to go ahead with constructing a dockyard on the Isle of Grain, attention was directed to a second and more expansive project. This was construction of a dockyard at Northfleet, to replace Woolwich and Deptford. Eventually, so it was mooted, the yards at Chatham and Sheerness could also be reduced in scale, with their eventual closure likely to take place.[23] The genesis of the Northfleet scheme has its origins in a survey of 1805 and carried out by the Master Attendant at Woolwich, John Whidby. Whidby had been employed by the Navy Board to examine the area around Northfleet, this having been suggested to the Comptroller of the Board as a possible site for a new dockyard. At the time, it was thought that a small yard could be

constructed here, this to take the place of the failed Isle of Grain scheme. Whidby, having examined the sub-strata, concluded that the site might favour the building of a dockyard. However, nothing further was undertaken until the following year when John Rennie was asked by the Commission for Revising and Digesting the Civil Affairs of the Navy, to provide his observations both on the current state of the dockyards and the value of building a new one at Northfleet. In compiling the subsequent report, Rennie worked closely with both Whidby and a consulting engineer, William Jessop.

In possession of a much wider brief than any of their predecessors, Rennie, Whidby and Jessop attempted to unravel the problem as to why the Thames and Medway were subject to increased shoaling. Noting it to be a problem that was not simply restricted to the Kent yards, they settled upon the notion that it was a result of recent industrial and agrarian developments.[24] Further up river, and beyond where the dockyards were sited, towns and villages were expanding. As they did so, they caused greater deposits of mud to enter the rivers and feed into the navigable channels and dockyard harbours. Additional deposits also found their way into these same rivers from agricultural improvements and land drainage. Of the Thames, and specifically referring to Woolwich and Deptford, it was confirmed that 'the general depth of water in the Thames' appeared to be in decline:

> The constantly increasing influx of Soil from London, occasions a very serious injury to the navigation of the River. Many irregular encroachments have likewise been made on its shores in its passage through London. . . which checks the influx of the Tide.[25]

Another cause of silting, so it was clearly indicated, was London Bridge, whose starlings 'act as a partial dam' and this, together with other obstructions on the river, needed to be removed. In turn, this would allow 'the tide to flow much further up the river' resulting in a constant flowing of water rather than a lengthy period of stagnation. It was this period of stagnation, or entrapment, especially in the area of London Bridge, that allowed the settling of deposits.[26]

As for Chatham, the report, in confirming that the Medway was also subject to a continuing loss of depth, made reference to Commissioner Kempthorne's evidence of 1724. Comparing this with a survey undertaken in 1803 by Samuel Hemmans, Master Attendant at Chatham, it was concluded that:

> Since the year 1724 several of the moorings have become more shallow . . the greatest soundings in East Gillingham Reach were 29 feet the least 20 feet, but these soundings extend lower down than those of 1724. In Sov-

> ereign or West Gillingham Reach the soundings were 26 feet, the least 15 feet. In Cockham Wood Reach, the greatest soundings were 16 feet the least 12 feet . . . [27]

Furthermore, as the compilers of the report explained, if nothing was done to improve the navigation of the Medway:

> the soundings will go on diminishing in depth, and the Dock Yard will become less useful. In its present state, vessels of large draught of water must have all their guns and stores taken out before they can come up to the Dock Yard, and be dismantled before they can be taken into dock.[28]

Apart from developments taking place further up river, much of the blame for the increased silting of the harbour at Chatham was placed upon Rochester Bridge. As with London Bridge, its influence upon the river was that of reducing the overall flow and allowing deposits to settle:

> If Rochester Bridge had been pulled down some years since, and a new one built in the line of the streets through Strood and Rochester, with piers of suitable dimensions, instead of repairing the old one, the large starlings of which act as a dam, and prevent the tide from flowing up to the extent it otherwise would do, the depth of water in front of Chatham, Rochester and in Cockham Wood Reach, would have been greatly improved. But the Trustees have unfortunately determined on repairing the old bridge, this nuisance still remains, and no advantage whatsoever has been gained.[29]

In turning their attention to the construction of a yard at Northfleet, the writers of the report showed considerable enthusiasm. They noted that if a dockyard were built here, it would have none of the disadvantages associated with the other Kentish yards. While easy to approach, the waters immediately off Northfleet were also well protected and had the necessary depth to accommodate a fleet of large warships:

> From the soundings in this part of the river, which were taken by Mr. Whidby, it appears, that from opposite Greenhithe to the north-eastern end of Fidler's Reach, there are 7 fathoms at low water; in the middle of the river, below Grays, 6 fathoms; a little further down the river the depth increases to 7 fathoms; and along the lower part of Northfleet Hope there are 8 fathoms; in the middle of the stream, nearly close to the verge of low water on the west side of the river, where the entrance lock of the new establishment is proposed to be situated, there are 7 fathoms.[30]

Additionally, the ground was of 'good brick earth', this providing excellent foundations, while there was plenty of land for future expansion and the building of houses for workers. Finally, so it was noted, Northfleet was on 'the weather shore with respect to prevailing winds of the country'.[31]

In having accepted that Northfleet was the ideal site, the writers of the report, and presumably led in this direction by Rennie, went one stage further and demonstrated how the yard would be designed. Locating it on a spit of land that jutted into the river between Northfleet Hope and Fiddler's Reach, the most important feature of the yard was to be two huge basins or wet docks (**Fig. 1**). The smaller, containing 25 acres of water, was to be used by ships preparing for sea. To ensure that the equipment needed by these ships was close at hand, this basin was surrounded by various storehouses, a ropery (for supplying rigging and other items made of rope), a gun wharf and victualling yard. The second and larger of the two basins, holding 82 acres of water, was to be used by ships under repair or newly built. Dominating the middle section of the yard and connected to Northfleet Hope by a serious of locks, this basin was connected to twelve dry docks and eight building slips. Immediately adjacent was an area for the storage of timber while each slipway and dry dock would have a nearby covered workshop.

Already, it has probably become clear that an orderly layout to the yard was being sought. Unlike the existing yards, that proposed for Northfleet would have a certain logic to its design, the differing processes confined to precise work areas. However, this was only part of the scheme. Thought was also given to enhanced efficiency by ensuring that each individual section of the yard was equally well planned. In the case of timber, the basic raw material upon which the dockyard was dependent, a clear operational sequence was to be introduced. In orderly and progressive succession, and adequately separated by space, were respectively sited a river-side timber wharf (for the receipt of timber), saw mills and pits (for cutting and sectioning), seasoning sheds and timber berths (for storage immediately before use). All were to be connected by twin rail lines that would assist the arriving uncut timber to be smoothly carried through the various stages of arrival, preparation and storage.

As part of a drive to ensure that Northfleet would be the nation's most efficient dockyard, it was also stated that steam machinery should be extensively used. Although, as indicated, 'the advantage of which [when] compared with manual labour' was generally accepted, it was little used in the existing yards, 'Portsmouth being the only Dockyard where they are at all employed, and not even there the extent to which they ought to be, consistently with economy and dispatch'.[32] Among areas of the Northfleet yard that it was felt should be harnessed to steam power were the ropery (using machinery similar to that employed in the northern cotton mills), the sail loft, paint and lead mills and the smelting of copper.[33]

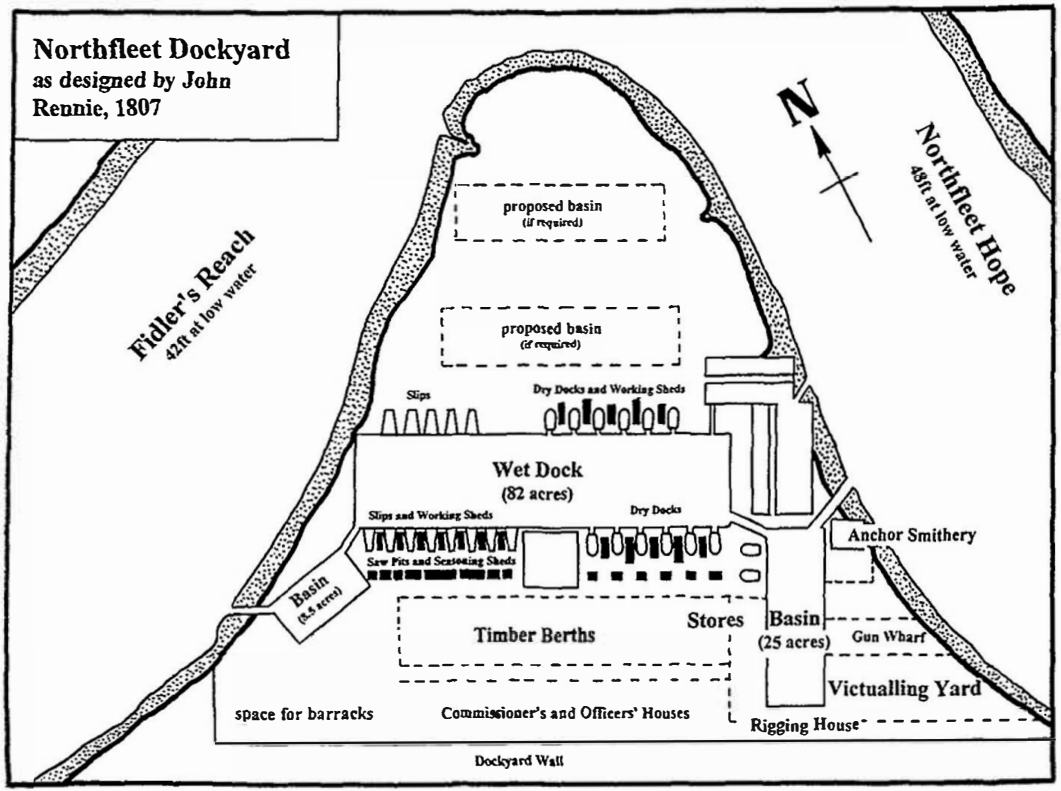

Northfleet Dockyard
as designed by John Rennie, 1807
N
Fidler's Reach
42ft at low water
Northfleet Hope
48ft at low water
proposed basin
(if required)
proposed basin
(if required)
Slips
Dry Docks and Working Sheds
Wet Dock
(82 acres)
Slips and Working Sheds
Dry Docks
Saw Pits and Seasoning Sheds
Basin
(8.5 acres)
Anchor Smithery
Timber Berths
Stores
Basin
(25 acres)
Gun Wharf
Victualling Yard
space for barracks
Commissioner's and Officers' Houses
Rigging House
Dockyard Wall

Fig. 1.

The scheme, as proposed, was met with considerable enthusiasm both by those in government and the navy as a whole. However, considerable uncertainty existed as to whether the project was affordable. Rennie had estimated the likely cost to be in the region of £6m, a figure that was disputed. In February 1810, First Lord Henry Mulgrave indicated his concern that the figure was likely to double once buildings work was underway. This supposition was challenged, however, by John Briggs of the Victualling Board. In a letter to Robert Dundas, a future First Lord, he pointed out that previous estimates made by Rennie for such major works as the London Docks, East India Docks and Hull Docks, had all come within a small sum of the original estimate.[34] In fact Robert Dundas, together with his father, Viscount Melville, a former First Lord, were among the greatest supporters of the new yard. Indeed, Robert Dundas was to demonstrate his support in an open letter written to Prime Minister Spencer Perceval. Published in a number of newspapers, Dundas stressed the importance of the new dockyard as a means of countering naval expansion of the northern powers.[35] Others who supported the project were former First Lords, Earl St. Vincent (1801-04) and Lord Barham (1805-08).[36]

With so much support, there seemed every likelihood that the Northfleet scheme would go ahead. Most certainly there was precious little delay in the purchase of the necessary land, with the government entering into negotiations for 23 separate parcels of farmland that lay between Galley Hill Farm (on the London to Rochester Road) and the Thames. In all, the combined area totalled in excess of 150 acres.[37] However, despite this acquisition of real estate, no move was made to undertake any construction work. In 1813, Robert Dundas, who had now inherited his father's title and was also First Lord, was reminded of this by John Barrow, Second Secretary at the Admiralty. Barrow was another who supported the yard and urged the First Lord to move forward on the project while indicating the long term advantages of having ships of the fleet held securely in a large wet dock. The chief of these, so he indicated, would be in keeping the slips safe from both the elements and opportunist thieves:

> The size advantage of having a large fleet of ships safely locked up in a bason, within the enclosure of a dockyard secure from the damage unavoidable in a tide-way, and from every species of embezzlement, is not to be appreciated - but some idea may be formed from the saving from embezzlement alone out of merchant ships by the West India docks which has been estimated at £200,000 a year.[38]

A further saving would also result in the manufacture of rope and

cable used for the mooring of vessels and estimated to be £87,000 per year:

> The reduction of the annual expenditure in mooring chains &c for the ships in ordinary would be very considerable if instead of being moored in a tide way they were quickly arranged in a bason, and the facility with which they could be repaired in the contiguous docks and prevent their decay is a most important consideration.[39]

Despite such widespread support and the purchase of the necessary land, nothing further was done in constructing a yard at Northfleet. Instead, this project was gradually overtaken by events at Sheerness. A yard that had been much neglected over the years, it had now begun to deteriorate rapidly. In June 1807 there was an extensive collapse of the dockyard wharf. The cause was partly that of inadequate puddling but, in addition, many of the supporting timbers were rotted. The resulting gap, which was left unrepaired, led to further damage during a series of winter storms. A number of reports on the situation revealed that, apart from repair work to the damaged area of the yard, considerable effort would have to be expended upon other areas that were also close to collapsing. John Rennie, who was commissioned to examine into the state of Sheerness, assured the Admiralty that the wharves, basins and docks 'are in a very bad state of repair. The timber of the wharfs generally speaking is rotten, the foundation in many places has ridden outwards - the earth and pavements are sunk.....'.[40] Furthermore, so he added, of the dockyard, 'its constituent parts are gone, patching and mending will only prolong the evil day for a short time, but the time will come, and this is not very distant, when the whole must be thoroughly repaired'.[41]

As a result of being made aware of such a serious problem existing at Sheerness, and not wishing to lose the only freely accessible yard on the eastern side of the country, the Admiralty determined to save these facilities at all cost. At the same time though, if Sheerness was to be modernized, then opportunity should also be undertaken to expand. In April 1813, approval was given to a massive two-part project that would see an entire new yard built in an area once occupied by some of the houses of Blue Town and facilities belonging to the Ordnance Board. An Act of Parliament had ensured the compulsory purchase of all privately held land while the Ordnance Board was provided with a new site located at the extreme north end of the dockyard. With work beginning on the new yard in 1813, it was not to be completed for ten years. Once in use however, the older and much decayed yard, was to be completely razed and replaced by a scheme that would complement building works already completed. This

second phase, begun in 1823, was itself finished in March 1830 with the total cost of the two-part scheme amounting to £1.5m.

This sudden and unforeseen need to repair and modernize the yard at Sheerness severely impacted upon plans for any new yard at Northfleet. Quite simply, the government had insufficient money to finance two major projects paralleling each other in time. In addition, the end of the French Wars (in 1815) served as another nail in the scheme to build a new Thames dockyard, with a nation at peace unwilling to spend excess sums upon the needs of the navy. At the same time though, other factors were coming into play. In particular, the harnessing of steam had given a new lease of life to Deptford and Woolwich while also helping solve the problem of how larger warships could more easily navigate the Thames and Medway.

It was the emergence of the steam dredger that was to have the greatest bearing on the situation. In use from about 1802 onwards, each major dockyard was soon in possession of such a vessel (**Plate II**). Directed entirely towards keeping the harbours and moorings free from shoaling mud banks they had an efficiency undreamed of only a few years earlier. Gradually increasing in size, the Chatham mud dredger was, by 1823, capable of removing 175 tons of mud per day.[42] Yet, even at this rate of removal, the problem of accumulated mud in the harbours was not entirely resolved for several decades. In 1818, for instance, a year in which nearly £2000 was spent on the removal of mud from the Medway, it was concluded that even more expenditure would be required:

> In Chatham Reach, on the East side the mud has accumulated very much and reduced the depth of water at the moorings on that side of the river, quite to the shore particularly at the 7th, 8th, 9th, 10th, 11th, 12th and 13th as also at the entrance to the Dock, slips, mast pond &tc. The mud has likewise increased very much on the West side of the river at the mooring placed there & at the West entrance into St. Mary's Creek &c &c. In Cockhamwood Reach I have not observed much alteration, although I think the bank on the shore seems to extend further out & the 9th mooring is shoaler. Where once was four pair of moorings in East Gillingham Reach the extension of Hoo flats prevents the possibility of placing there any kind of vessel whatever afloat.[43]

On this occasion various obstructions were held to blame, these not only including Rochester Bridge, but a new military bridge and the gun wharf jetty. Between them, they greatly slowed the speed of the river and so contributed to increased shoaling:

> Between the jetty and military bridge the mud has accumulated to an amazing degree on the dockyard side, and likewise on the opposite side by the

> marshes mouldering and washing into the river, the military Bridge has done great mischief to the river in stopping that free egress and regress of water which it used to have prior to the bridge having been placed there . . [44]

As for Rochester Bridge, this, so declared Robert Barlow, Commissioner at Chatham and the one responsible for assembling this particular report, concluded:

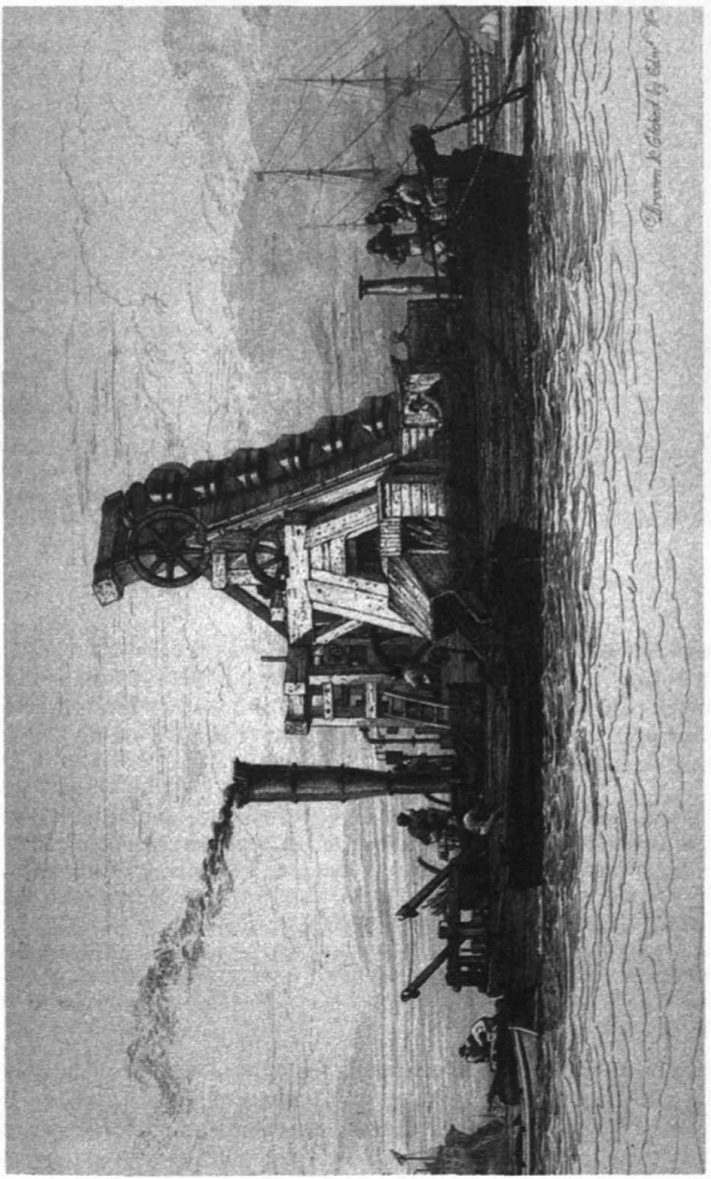
> Upon the whole I have no hesitation in saying it is my opinion had the arches of Rochester Bridge been wider to have admitted a far great quantity of passing and repassing it would have made a greater backwater than at present, and not caused such an accumulation of mud in the river.[45]

Although a scheme was then in hand to widen the central arch of Rochester Bridge, and therefore meet Barlow's requirement for a greater amount of water 'passing and repassing', the Commissioner brought a halt to this project. At a meeting of the Rochester Bridge Wardens held on 20 January 1818, he informed them that a new bridge should be built, this under the authority of Parliament.[46] However, the failure to acquire adequate funding resulted in the Bridge Wardens discarding such an expensive idea, with the widened central arch completed in 1824 (**Plate III**).[47]

Doubtless, construction of the new central arch, combined with the removal of several obstacles (including the military bridge) projecting into the Medway, eventually ensured that the river began to flow with greater rapidity. This, together with an additional number of ever larger steam dredgers, ensured that Chatham was provided with a future that many had long feared it might never obtain. However, any similar hopes for Woolwich and Deptford were but short lived. Within the harbours and navigable channels associated with these two yards, the problems were much greater than in the Medway. Initially, though, both acquired an extension to their usefulness when the two yards began to specialise in the building of naval paddle steamers.[48] Requiring a much shallower draught, these vessels were able to access both Deptford and Woolwich without undue problem. As a result, the steam facilities at Woolwich soon began to dominate that particular yard, with two extensions built between 1828 and 1842 on the marshlands to the west of the yard. Unfortunately though, steam vessels were also growing in size and, as they did so, they too were hindered by the inadequate depth of water.

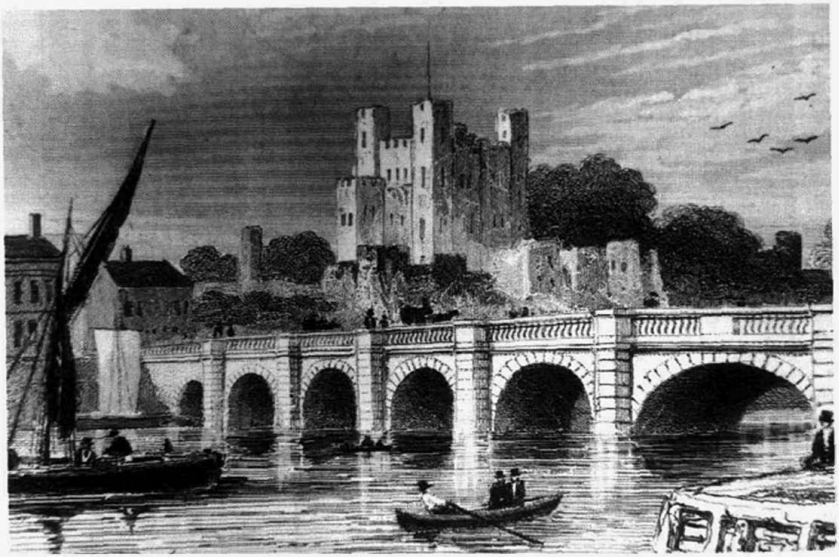
Even while building works on the second Woolwich steam extension were underway, concern was again expressed as to the overall value of the yard. By 1842, so much mud had flowed into a newly constructed steam basin that the Portsmouth harbour mud dredger had to be employed to restore the basin to its original depth (Plate II).

PLATE II



The Portsmouth harbour Steam Dredger

PLATE III



Rochester Bridge with widened central arch

Indeed, an annual expenditure of £12,000 was set aside for removal of mud from around the dockyard at Woolwich. As a result, a plan for a third basin was rejected. According to John Rennie junior, the only logical policy was that of closing the yard at Woolwich and concentrating steam repair facilities at Chatham:

> It is said that it [Woolwich] is more convenient for the Steam Navy; but this is by no means correct, for the steam engines, which are contracted for by manufacturers in the vicinity of London, are generally fitted on board the vessels in the East India Docks, and those which are made in the country could with equal facility be sent to Chatham; in fact, there is no argument which will apply in favor of Woolwich which will not be applicable to Chatham, while the increased depth of water, extent, proximity to sea, and capability of improvements, render the latter superior in every other respect.[49]

Although no action was immediately taken, this was the eventual outcome with land, in the vicinity of Chatham dockyard, having been purchased for the construction of such an extension. Furthermore, with steam dredgers eventually able to keep pace with the accumulation of mud in the river, the green light was given for the creation at Chatham of the largest steam facilities to be built anywhere in the world.[50] With

such an all encompassing project, there was simply no reason for the continued existence of Woolwich or Deptford yards and they were both closed in 1869. In effect therefore, the overcoming of the Medway mud shoals and the ability to expand Chatham had solved the eastern dockyard crisis. Northfleet was no longer needed because Chatham was now much more accessible while having the essential requirement of being in possession of very substantial areas of unused land - namely St Mary's Island and nearby marshes.

NOTES

[1] Immediately to the west of the dockyard at Woolwich a small amount of marshland did exist for expansion and this had allowed for a small increase in the size of the yard. However, as will be demonstrated, a range of further problems prevented consideration being given to the use of this land.

[2] At Sheerness this was carried out by means of first creating a breakwater through the sinking of obsolete warships immediately in front of the existing yard. As these old warships gradually disintegrated, the land upon which they stood was subject to natural in-filling.

[3] *Pepys Miscellanys*, Vol. 10 f.453 reproduced from [Scottish Record Office] SRO GD51/2/964/2.

[4] *Ibid.*

[5] *Ibid.*

[6] To ensure that larger vessels could navigate the Medway, it became customary for ships to unload and take on stores at Black Stakes (off the Isle of Grain), this sufficiently reducing the draught for a safe passage along the river.

[7] PRO ADM 140/6.

[8] NMM ADM/B/185, 21 August 1771.

[9] PRO ADM 7/660. 13 July 1773.

[10] BL Kings 44.

[11] *Ibid.*

[12] *Ibid.*

[13] *Ibid.*

[14] *Ibid.*

[15] Chatham was also built on a lee shore. Here, the problem was not quite so pressing, the yard partly protected by the Frindsbury Peninsula. John Rennie however, considered it to be a sufficient problem to suggest that Chatham yard might be moved to the opposite side of the river.

[16] PRO ADM 106/3553, 21 December 1743.

[17] *Ibid.*, 3 May 1744.

[18] BL Kings 44.

[19] See P. MacDougall, 'Malaria: its influence on a North Kent Community', *Archaeologia Cantiana*, xcv (1979), 255-64.

[20] PRO ADM7/663.

[21] *Ibid.*

[22] *Ibid.*

[23] Rennie, J., *Treatise on Harbours* (London, 1851), 51.

[24] Both the harbours adjacent to Portsmouth and Plymouth yards were also subject to increased shoaling during this period. See BL Add Ms 27,884, f.3-5.

[25] BL Add Ms 27,884, f.10.

[26] *Ibid.*, f.11-15.

[27] *Ibid.*, f.17.

[28] *Ibid.*, 20.

[29] *Ibid.*, 19.

[30] Rennie, *op. cit.* (see note 23), 56.

[31] *Ibid.*, 57.

[32] BL Add Ms 27,884, f.46.

[33] *Ibid.*

[34] SRO GD51/2/964/5, 18 Feb 1810.

[35] SRO GD51/2/967/3. March 1810.

[36] Barham indicated in a letter to William Wilberforce, and commenting on Melville's published correspondence with Perceval, that every MP should 'carry a copy of it in his pocket'. See SRO GD/51/2/967/3.

[37] PRO ADM106/3200.

[38] SRO GD51/2/975. 1813.

[39] *Ibid.*

[40] PRO ADM106/3192, 22 Jul 1808.

[41] *Ibid.* A detailed account of the deterioration of Sheerness and the subsequent decision to rebuild Sheerness can be found in P. MacDougall, *Sheerness Dockyard* (Ptarmigan Books, 2000).

[42] PRO ADM106/1827, 5 November 1823.

[43] PRO CHA/F/31, 5 May 1818.

[44] *Ibid.*

[45] *Ibid.*

[46] Rochester Bridge Trust RBT 214, 'Copy of correspondence, reports &c relating to the negociation with the Admiralty for Building a New Bridge, 1818-20', 2-6. Requoted from Ormrod, D., 'Rochester Bridge, 1660-1825' in Yates, N., and Gibson, J. M., *Traffic and Politics* (1994), 210. At this same meeting, Barlow went on to state, 'the River Medway, like the Thames, is in gradual state of decay, and that in time Chatham will be less valuable as a naval station than it is now'.

[47] *Ibid.*, 214.

[48] See in particular, P. MacDougall., 'The Woolwich Steamyard', *Mariner's Mirror*, 85:2, 172-181.

[49] Rennie, *op cit.* (see note 23), 65.

[50] For more details of the Chatham extension see, P. MacDougall, *The Chatham Dockyard Story* (1987).